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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,854	04/15/2004	Chien-Chao Huang	24061.150/TSM2003-0964	6844
42717	7590	11/04/2005	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			DICKEY, THOMAS L	
			ART UNIT	PAPER NUMBER
			2826	

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/824,854

Applicant(s)

HUANG ET AL.

Examiner

Thomas L. Dickey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-38 is/are pending in the application.
- 4a) Of the above claim(s) 28-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 17-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 04/15/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. The preliminary amendment filed on 09/09/2005 has been entered.

Election/Restriction

2. Applicant's election without traverse of Species I in the Paper filed 09/09/2005 is acknowledged.

Applicants allege that claims 17-38 read on Species I. This allegation is factually incorrect.

According to Applicant (reference paragraphs 0029-0033 and figure 2), Species I consists of a FinFET 200 including an insulator 220 formed over or integral to a substrate 210; source and drain regions 230a and 230b connected by a channel region 230c; first and second Ti, Ta, Mo, Ni, TiN, TaN, CoSi, TiSi, TaSi, MoSi, or NiSi contacts 240a and 240b formed over source and drain regions 230a and 230b; doped polysilicon and/or Ti, Ta, Mo, TiN, TaN, MoSi, NiSi, and CoSi gate 250 extending from at least partially between source and drain regions 230a and 230b and subsequently widening and terminating at a third contact 240c, which is substantially similar to contacts 240a and 240b. As shown in FIG. 2, FinFET 200 may include a gate dielectric that interposes gate 250 from one or more of source-channel-gate 230a-c, and gate 250 may include a boss, wedge, fin, or protrusion 255 extending away from source-channel-gate 230a-c, which may extend to a height H_1 over source-channel-gate 230a-c. FinFET 200 includes a Ge, SiGe, SiC, carbide, or strained SiGe sill 250a located within gate 250.

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Sill 250a may include two (a plurality of) layers wherein the first such layer is a germanium implant layer, and the second such layer is a Si, SiGe, strained Si, strained SiGe, diamond, or carbide cap layer.

Claims 28 and 38 include the limitation of an insulator located below a channel region and interposing at least two doped regions, the insulator comprised substantially of air. Note lines 5 and 6 of claim 28 and lines 6 and 7 of claim 38. Since Species I does not include an insulator comprised substantially of air, claims 28 and 38 do not “read on” Species I (although, because Species II does include an insulator 320 comprised substantially of air, note figure 3 and paragraph 0035, claims 28 and 38 do “read on” Species II). Because claims 28 and 38 do not “read on” Species I, claims 28 and 38 are withdrawn from consideration.

Claims 29-37 include the limitation of a plurality of microelectronic devices and a plurality of interconnect layers for electrically interconnecting said plurality of microelectronic devices. Note lines 9 and 10 of claim 29 (claims 30-37, which depend from 29, include this limitation because, legally, they include all the limitations of claim 29. Note 35 USC 112, paragraph 4). Note lines 9 and 10 of claim 29. Since Species I includes a plurality of microelectronic devices nor a plurality of interconnect layers, claims 28 and 38 do not “read on” Species I (although, because Species III does include a plurality of microelectronic devices 102, 200, and 300 and a plurality of interconnect layers 440, 450 for electrically interconnecting said plurality of microelectronic devices, note figure 4 and paragraph 0038 and 0040, claims 29-37 do “read on” Species III).

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Because claims 29-37 do not “read on” Species I, claims 29-37 are withdrawn from consideration.

Oath/Declaration

3. The oath/declaration filed on 08/30/2004 is acceptable.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 260a, 260b, 260c, and 260d. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. Because Applicants failed to show the “plurality of doped layers” of lines 4-5 claim 17 in the drawings, and, further, and also because they failed to describe said “doped

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layers,” in their specification, it is assumed that Applicants meant, “said plurality of doped regions,” when they wrote, “a plurality of doped layers.” If this assumption is incorrect the drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “plurality of doped regions” and the “plurality of doped layers” must both be shown or the feature(s) canceled from the claim(s). Currently only the “doped regions” (part 120 in figure 1A) are shown. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Priority

6. Applicants have made no claim for priority.

Information Disclosure Statement

7. The Information Disclosure Statement filed on 04/15/2004 has been considered.

Specification

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

As stated in § 5 above, should Applicants elect to retain the language “a plurality of doped layers” in claim 17, they must provide proper antecedent basis for said “a plurality of doped layers” in the specification. Applicants may also overcome this objection by removing the language “a plurality of doped layers” from claim 17.

9. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

10. As explained above, the claim language per se of claim 17 is not objected to but the suggestion is that “a plurality of doped layers,” in claim 17 lines 4-5 is not intended to introduce a new element but instead should be written – said plurality of doped regions

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– so as to refer back to “a plurality of doped regions” in line 3. Applicants are free to retain the current phrasing but are warned that it is narrower than the suggested phrasing. The suggested phrasing requires only at least 2 (a plurality of) doped entities, while the current, “doped layer,” phrasing requires at least 4 (a plurality of regions and a second plurality of layers) doped entities. In the event Applicants retain the current phrasing they must then amend their specification and drawings to reflect this phrasing.

In any event Claim 27 is objected to for the lack of any apparent basis for “the second sill.”

Appropriate correction is required.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

A. Claims 17-27 are rejected under 35 U.S.C. 102(e) as being anticipated by LIN AL. (2005/0224786).

Lin al. discloses a microelectronic device comprising a substrate 210-220 comprising diamond or strained silicon; a patterned feature 240a-b, 260a-c located over the substrate 210-220 and over a plurality 230a-b-c of doped regions, the patterned feature

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240a-b, 260a,b,c comprising at least one electrode 240a-260a or 240b-260b, the electrode 240a-260a or 240b-260b being situated proximate said plurality 230a-b-c of doped regions; and a silicon germanium or strained silicon comprising sill 260a or 260b, located within the electrode 240a-260a or 240b-260b, the sill 260a or 260b comprising at least one germanium-comprising impurity or at least two distinct and segregated impurities, and adapted for modifying an electrical property of at least one member 230a or 230b (sill 260a is adapted for modifying said electrical property of member 230a, by injecting current into said member; conversely sill 260b is adapted for modifying said electrical property of member 230b, by removing current from said member) adjacent the electrode 240a-260a or 240b-260b, and a second sill 260c comprising diamond; wherein the sill 260a or 260b is formed prior to the patterning of the electrode 240a-260a or 240b-260b or the sill 260a or 260b is formed in the electrode 240a-260a or 240b-260b, the electrode 240a-260a or 240b-260b and partially etched to reduce the thickness of the electrode 240a-260a or 240b-260b and the sill 260a or 260b, and wherein the electrode impurity concentration ranges between about 10^{13} atoms/cm³ and about 10^{19} atoms/cm³. Note figure 2 and paragraphs 0028-0030 of Lin al.

B. Claims 17-20 and 22-26 are rejected under 35 U.S.C. 102(e) as being anticipated by MONTGOMERY ET AL. (2004/0208454).

Montgomery et al. discloses a microelectronic device comprising a substrate 32 comprising strained silicon (note paragraph 0011); a patterned feature 22 located over the substrate 32 and over a plurality of doped regions, the patterned feature 22 comprising at least one electrode 48-52-53, the electrode 48-52-53 being situated

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proximate a plurality 36-40-44 of doped layers; and a silicon germanium or strained silicon (note paragraph 0051) comprising sill 52, located within the electrode 48-52-53, the sill 52 comprising at least one germanium-comprising impurity or at least two distinct and segregated impurities, and adapted for modifying an electrical property of at least one member 230a or 230b adjacent the electrode 48-52-53; wherein the electrode impurity concentration ranges between about 10^{13} atoms/cm³ and about 10^{19} atoms/cm³. Note figures 2-4, 16, 22, paragraphs 0051-0054, and paragraph 0067 of Montgomery et al.

The applicant's claims 18 and 19 do not distinguish over the Montgomery et al. reference regardless of the process used to form the sill and the electrode, because only the final product is relevant, not the recited processes of forming the sill prior to the patterning of the electrode or forming the sill in the electrode and partially etching the electrode to reduce the thickness of the electrode and the sill.

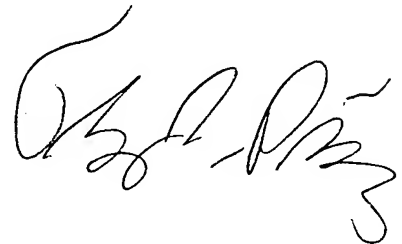
Conclusion

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'T. L. Dickey', with a stylized flourish at the end.

Thomas L. Dickey
Patent Examiner
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10/05